



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,291	09/25/2003	George Liang	2003P14216US	4268
7590 Siemens Corporation Intellectual Property Department 170 Wood Avenue South Iselin, NJ 08830			EXAMINER PATEL, VISHAL A	
			ART UNIT 3676	PAPER NUMBER
			MAIL DATE 12/12/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/671,291		LIANG, GEORGE	
	<b>Examiner</b>		<b>Art Unit</b>	
	Vishal Patel		3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-17 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 5-17 21-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-17 and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson et al (US. 6,261,053).

Regarding claim 1: Anderson discloses an outer air seal assembly (seal assembly of figure 13) for reducing leakage proximate turbine engine blade tip (intended use) having a predetermined direction of rotation (rotation of turbine component inside 20 and 20', intended use).

The outer air seal assembly (figures below) comprising a first outer air seal segment (e.g. segment 20) radially spaced apart from a central axis by a predetermined first distance (distance from axis where gas is flowing), the first outer air seal segment characterized by a first interface edge (e.g. edge opposite the second interface edge) and an opposite second interface edge (e.g. second edge described in figure below) being characterized by a radially-aligned portion (e.g. align portion above the panel) and a radially skewed portion (e.g. radially inward region) extending rotationally downstream therefrom (the second edge is capable of extending rotationally downstream), a second outer air seal segment (20') radially spaced apart from the central axis by a predetermined second distance and the second outer air seal segment being

Art Unit: 3676

characterized by a first interface edge (e.g. first edge of the second member) and an opposite second interface edge (e.g. second edge opposite the first edge of the second member).

The second outer air seal segment first edge being characterized by a radially aligned portion (e.g. outer portions that are aligned toward each other) and a radially-skewed portion extending rotationally downstream therefrom (e.g. the radially-skewed portion at the radially inner region). The second outer air seal segment first edge being disposed proximate and substantially parallel to the first boundary member second edge and space apart therefrom by an interface gap (e.g. gap 58) disposed therebetween.

The interface gap includes a radially-aligned portion (the interface gap has a radially-aligned portion that is aligned with the radially-aligned portion of the first edge of the second outer air seal segment that is adjacent to the radially outward edge) and a radially-skewed portion (radially-skewed portion of the interface gap that is adjacent to the radially inward region and aligned with the radially-skewed portion of the first edge of the second outer air seal segment), the radially-skewed portion being rotationally-downstream from the radially-aligned portion of second boundary member first edge and having a radially-inward region (radially-inward region of 20' that forms a part of the interface gap) and a radially-outward region (radially-outward region of 20 opposite of the radially-inward region), the radially-outward region being rotationally-upstream of the radially inward region (the radially-outward region is upstream from the radially-inward region). The outer air seal segment interface edges are constructed to reduce pulse loading tendencies of a fluid (the seal assembly is capable of reducing pulse loading tendencies since the first and second outer air seal segment have the structure as claimed by applicant). The radially skewed portion of the first outer air seal segment second edge extends

Art Unit: 3676

beyond the plane of the second edge radially-aligned portion (this is the case since the radially aligned portion is defined in figure below and the radially skewed portion extends beyond the radially aligned portion) and protrudes substantially across the radially-aligned portion of the interface gap (this is the case since the radially skewed portion extends beyond the radially aligned portion) to cooperatively form a radially skewed portion (radially skewed portion of the gap as defined in figures below that is formed by the radially skewed portion of the first outer seal segment and the radially skewed portion of the second outer seal segment) of the interface gap with the radially skewed portion of the second outer air seal segment first edge.

Regarding claim 2: The interface gap (58) separates the first and second outer air seal segments circumferentially.

Regarding claim 3: The seal assembly further including a blocking panel disposed within the interface gap (panel similar to 16 blocking the interface gap 58).

Regarding claim 5: The blocking panel disposed within the interface gap.

Regarding claim 6: The blocking panel is disposed within the radially-aligned region (the panel is between the radially-aligned region of the first and second boundary members).

Regarding claim 7: A partition member (as showed in attached figure 13) extending into the interface gap, wherein a serpentine-shaped pathway is formed within the interference gap (this is the case since two partition members are there and it forms a serpentine shape pathway).

Regarding claim 8: The partition member is disposed on the first outer air seal segment (see attach figure).

Regarding claim 9: The partition member is disposed on the second outer air seal segment (see attached figure).

Regarding claim 10: The partition member is oriented in a substantially radially aligned manner with respect to the central axis).

Regarding claim 11: The partition member is oriented in a circumferentially aligned manner with respect with the central axis (this is the case since the partition are circumferential).

Regarding claims 12-13: The first outer air seal segment further includes a radially inward surface (inward surface that has the partition) and a conduit (52) adapted to fluidly connect a source of cooling fluid to the interface gap, whereby the interface gap is adapted to deliver the cooling fluid to the location proximate the radially inward surface (as seen in the attached figure). The conduit is fluidly connected to the radially skewed portion.

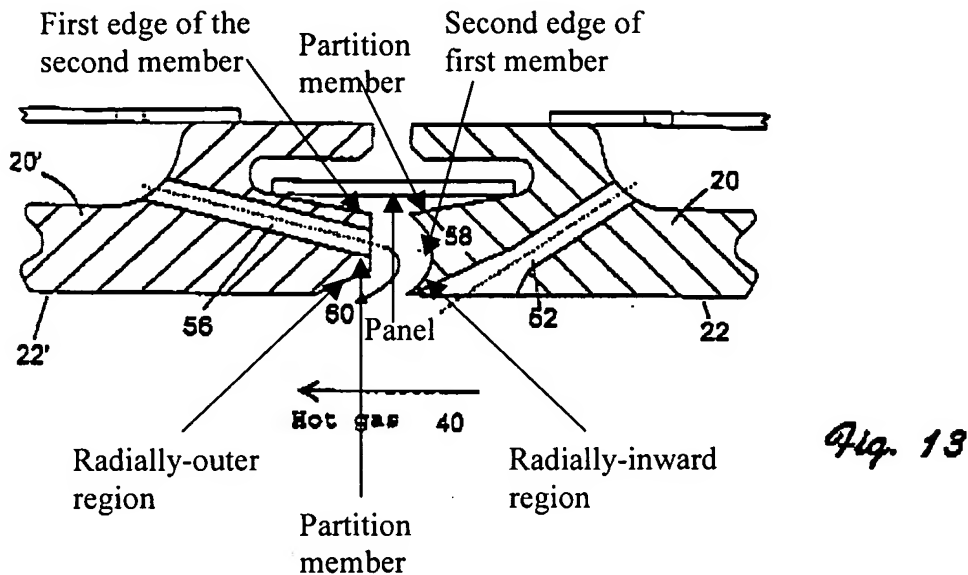
Regarding claims 14-15: The second outer air seal segment further includes a radially inward surface (inward surface that has the partition) and a conduit (56) adapted to fluidly connect a source of cooling fluid to the interface gap, whereby the interface gap is adapted to deliver the cooling fluid to the location proximate the radially inward surface (as seen in the attached figure). The conduit is fluidly connected to the radially-skewed portion.

Regarding claims 16-17: The first and second outer air seal segments have a radially inward surface (surfaces having the radially-inward region and the radially-outward region). The interface gap separates the first and second boundary members axially (as seen in attached figure). The seal assembly further including a radially aligned region (regions adjacent to the partitions) disposed radially-outward of the radially skewed portion.

Regarding claims 21-24: The outer air seal segments are disposable radially outwardly of and separate from a plurality of turbine engine fluid guide members assemblies or a stage of

Art Unit: 3676

turbine engine blades (intended use, the seal assembly is capable of being placed around a turbine fluid guide member assemblies or a stage of turbine engine blades).



### *Conclusion*

#### *Response to Arguments*

3. Applicant's arguments filed 6/27/05 have been fully considered but they are not persuasive.

Applicants' arguments that Anderson fails to teach reduction of pulse loading tendencies of a fluid is not persuasive because as stated in the rejection Anderson teaches all the limitations of the claimed seal assembly and is capable of functioning as claimed by applicant.

Applicants' argument that Anderson fails to disclose a radially-skewed portion that extends beyond the plane of the radially-aligned portion is not persuasive because as defined in figure below Anderson teaches that the radially skewed portion extends beyond the radially aligned portion.

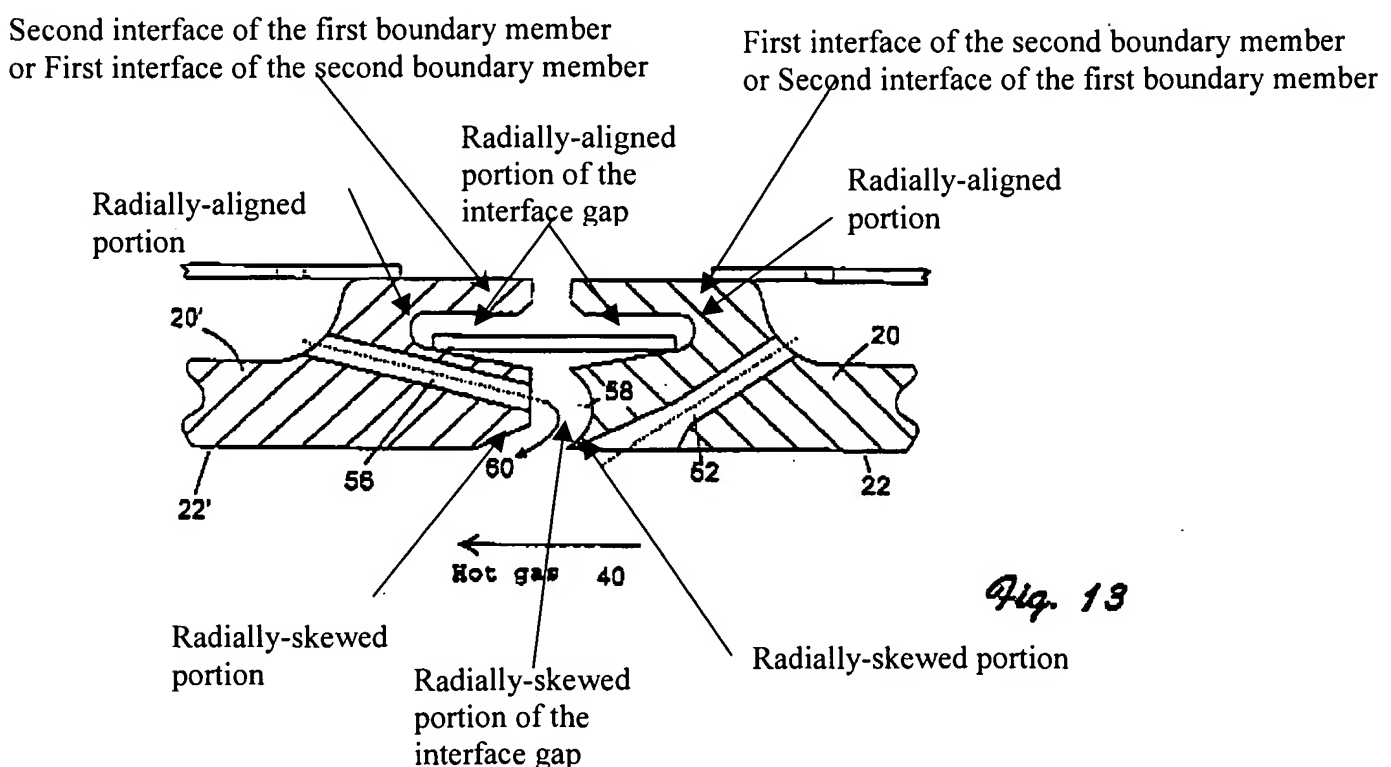
Art Unit: 3676

Applicants' argument that Anderson does not teach that the radially outward region being rotationally upstream of the radially region is not persuasive because as seen in the attached figure the radially-inward region is close to the stream of gas and the radially-outward region is further away from the stream of gas (see attached figure above).

Applicants' argument on page 9, lines 5-10, "In particular..., protruding substantially across the interface gap to cooperatively form a radially skewed portion of the interface gap." is not persuasive because this is not claimed. The claims recites "protrudes substantially across the radially aligned portion of the interface gap and this is what is shown in figure below.

Applicants' argument that Anderson teaches segment design...avoided is not because as stated in the rejection above that Anderson teaches all the limitations of the Seal Assembly since the members 20 and 20' are placed around blades as shown in Anderson to provide containment of fluid in the segment members 20 and 20'.

Applicants' argument that Anderson does not teach "a seal assembly...interface gap" is not persuasive because Anderson does teach this limitations as shown in figure below.





***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 3676

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VP  
December 10, 2007

A handwritten signature in black ink, appearing to read "Vishal Patel", with a stylized flourish at the end.

Vishal Patel  
Patent Examiner  
Tech. Center 3600